

Nalco Docket No.: 7673P2  
Customer No. 000049459

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**REMARKS**

This in reply to the final Office Action mailed on August 23, 2005.

Claims 1-20 are currently pending.

Claims 1-4 are rejected under 35 U.S.C. § 103(a) over EP 0291665 ("Rohm").

Claims 5-11 and 14-18 are rejected under 35 U.S.C. § 103(a) over EP 0291665 ("Rohm") and further in view of U.S. Patent No. 6,001,639 ("Schulein").

Claim 12 is rejected under 35 U.S.C. § 103(a) over EP 0291665 ("Rohm") and further in view of U.S. Patent No. 5,827,432 ("Huhtamaki").

Claims 13, 19 and 20 are rejected under 35 U.S.C. § 103(a) over EP 0291665 ("Rohm") and U.S. Patent No. 6,001,639 ("Schulein") and further in view of U.S. Patent No. 5,827,432 ("Huhtamaki").

Claims 1-20 are rejected under 35 U.S.C. § 103(a) over U.S. Patent Nos. 6,733,673 or 6,733,674 ("Sarker 673" and "Sarker 674").

Claims 1-20 are rejected under the judicially created doctrine of obviousness-type double patenting over U.S. Patent Nos. 6,733,673 or 6,733,674 ("Sarker 673" and "Sarker 674").

Claims 1, 4 and 14 are amended to particularly point out and distinctly claim subject matter which Applicant regards as his invention. Support for this amendment is found in the specification at page 3, lines 15-18 and page 5, lines 25-26.

No new matter is added by this amendment.

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**DISCUSSION**

The Rejection of Claims 1-4 under 35 U.S.C. § 103(a) over EP 0291665 ("Rohm").

The Examiner has maintained and made final the rejection under 35 U.S.C. § 103(a) over EP 0291665 ("Rohm"). In reply to Applicants arguments in the Amendment and Reply dated May 23, 2005, the Examiner states:

Applicants allege that the industrial wastewater and sludges as recited in the instant are considerable different from the biologically clarified sludges described by Rohm. It is submitted that the activated sludge recited in claim 3 would appear to be produced by a aerobic biological digestion step followed by a clarification step, and is considered patentably indistinguishable from the sludge of Rohm. It is noted that the instant claims fail to recite a specific content of inorganic solids or organic loading. Furthermore, applicants have not supplied sufficient factual evidence to support the above allegation.

Office Action at page 5.

Applicant respectfully traverses this rejection.

As discussed in the Amendment and Reply dated May 23, 2005, Applicant respectfully asserts that Rohm is concerned with the dewatering of biologically clarified sludges from municipal sewage plants. See Rohm, "Prior Art" which describes "typical sewage clarifying works", and also page 4, line 27 which describes sludge from a "municipal clarification plant", page 5, line 26 "current methods of sewage treatment" and the Examples which all describe dewatering of sludges from "a municipal clarifying plant".

Such municipal sludges are described in detail in the instant specification at page 2, lines 2-8 where Applicant states:

The sludges typically contain a considerable amount of cellulose, arising from paper, rags and vegetable fibers. Cellulose accounts for 60 to 80 percent of the total carbohydrate and 15 to 25 percent of the total organic particulate. Municipal sludges generally contain a large proportion of sanitary wastewater from one or more residential communities. The influent is generally of a more biological nature in municipal sludges.

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In contrast, Applicant respectfully asserts that the composition of industrial sludge is very different than that of municipal sludge and is quite specific to the industry. The nature of solids and content of solids in the wastewater or sludge can also vary greatly depending on the type of industry. The organics loading is generally higher in industrial influent than in municipal influent.

For example, steel and aluminum industrial sludge may contain steel and aluminum, iron oxides, aluminum oxides, heavy greases, lubricants and surfactants, while paper mill influent contains a very large proportion of fibers and solids from the process. A biological treatment facility in the refinery industry must remove the water soluble contaminants of crude oil refining and processing while chemical processing industry waste streams comprise more refined and more water-soluble organics including amines, esters, ethers, carboxylic acids, lactones, lactams, etc. Specification at page 2, line 8 to page 3, line 8.

Thus, while the activated sludge recited in claim 3, is prepared by a similar process to Rohm as noted by the Examiner, the composition of the resulting sludge is fundamentally different. In this regard, Applicant does not understand the Examiner's comment regarding the sufficiency of Applicant's extensive disclosure supportive of the differences between industrial and municipal sludges, particularly as Applicant's statements must be taken as true absent documentary evidence to the contrary.

Accordingly, Applicant respectfully asserts that Rohm does not teach or suggest that the treatments disclosed therein for treating waste derived predominately from organic material of biological origin would be efficacious for treating industrial sludges which typically comprise a higher loading of more highly refined organic material as well as other contaminants not typically present in municipal waste.

Furthermore, Applicant respectfully asserts that nothing in Rohm teaches or suggests that any of the enzyme preparations described therein would have efficacy for treating industrial wastewater or provide a basis for selecting a cellulolytic enzyme preparation from among the numerous treatments disclosed therein. See also, Examples, which present data for treating a municipal sludge with a protease-rich enzyme preparation (Example 1), an amylase-rich enzyme preparation (Example 2) and a cellulase-rich enzyme preparation which also includes beta-glucanase, laminarinase and

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hemicellulase (Example 3). Accordingly, Applicant respectfully requests withdrawal of the rejection of claims 1-4 under 35 U.S.C. § 103(a) over Rohm.

Further with regard to claim 4, the Examiner states:

Applicants argue that the ATAD sludges recited in claim 4 represent a new and fundamentally different class of sludge which includes specific biopolymers produced using thermophilic bacteria, and Rohm does not teach that enzyme treatments would be efficacious for treating these sludges. It is submitted that this sludge does not appear to be excluded from the teachings of Rohm. It is noted that the presence of thermophilic bacteria and biopolymers is not recited in the instant claim. Furthermore, Applicants have not supplied sufficient comparative evidence with Rohm to support the above argument.

Office Action at page 5.

Applicant respectfully traverses this rejection. As discussed in detail in the Amendment and Reply dated May 23, 2005, Applicant respectfully asserts that ATAD sludges are generated in a process that requires elevated temperatures and thermophilic bacteria and generates a different spectrum of biopolymers than those generated in typical biodegradation processes conducted at ambient or slightly elevated temperature. Applicant respectfully asserts that nothing in Rohm teaches or suggests that the treatments disclosed therein would be useful for dewatering ATAD sludges or provides any basis for selecting cellulolytic enzyme preparations from among the various enzyme preparations disclosed therein for use in dewatering ATAD sludges.

Nonetheless, Applicant has amended claim 4 to expressly recite a sludge comprising thermophilic bacteria and biopolymers produced by the thermophilic bacteria. Accordingly, Applicant respectfully asserts that the sludge of amended claim 4 is clearly differentiated by the sludge treated according to the method of Rohm and respectfully requests withdrawal of the rejection of claim 4 under 35 U.S.C. § 103(a) over Rohm.

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The Rejection of Claims 5-11 and 14-18 under 35 U.S.C. § 103(a) over EP 0291665 and further in  
view of U.S. Patent No. 6,001,639

The Examiner has maintained and made final the rejection of claims 5-11 and 14-18 under 35 U.S.C. § 103(a) over EP 0291665 ("Rohm") and further in view of U.S. Patent No. 6,001,639 ("Schulein"). In particular, the Examiner states:

Applicants argue that Schulein does not suggest that endoglucanase would have any utility for clarification and dewatering of wastewater and sludges as in the instant method. It is submitted that Schulein discloses in col. 41, line 63 through col. 42 line 11 that endoglucanase improves the degradability is wastewater plants. It is submitted that the combined teachings of Rohm and Schulein as applied above would suggest utility, to one skilled in the art having the references before him, for endoglucanase in the clarification and dewatering of wastewater and sludges as in the instant method.

Office Action at page 5.

Applicant respectfully traverses this rejection.

Applicant respectfully asserts that the passage noted by the Examiner above concerns use of endoglucanase for "enzymatic hydrolysis of various plant cell-wall containing materials or waste materials" in order to among others "...decrease the water binding capacity, improve the degradability in waste water plants, ...".

Applicant respectfully asserts that this passage at best suggests that endoglucanases can be used in processing of the plant cell-wall derived materials in order to achieve the desired effects in subsequent treatment. It does not, however, suggest use of endoglucanase for treatment of wastewater or sludges. Applicant is unable to locate any disclosure in Schulein regarding treatment of wastewater or sludge with endoglucanase. Therefore, Applicant respectfully asserts that the combination of Rohm and Schulein was only made with hindsight upon reading of the instant specification. Accordingly, Applicant respectfully requests withdrawal of the rejection of claims 5-11 and 14-18 under 35 U.S.C. § 103(a) over Rohm and further in view of Schulein.

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The Rejection of Claim 12 under 35 U.S.C. § 103(a) over EP 0291665 in view of U.S. Patent No. 5,827,432 and the Rejection of Claims 13, 19 and 20 under 35 U.S.C. § 103(a) over EP 0291665 and U.S. Patent No. 6,001,639 in view of U.S. Patent No. 5,827,4

The Examiner has maintained and made final the rejections under 35 U.S.C. § 103(a) of claim 12 over EP 0291665 ("Rohm") in view of U.S. Patent No. 5,827,432 ("Huhtamaki") and claims 13, 19 and 20 over Rohm and U.S. Patent No. 6,001,639 (Schulein) in view of Huhtamaki. In reply to Applicants arguments in the Amendment and Reply dated May 23, 2005, the Examiner states:

Applicants arguments concerning Huhtamaki are based on the propriety of Rohm and Schulein as combined above. It is submitted that these combinations are deemed properly applied for the reasons stated above.

Office Action at page 6.

Applicant respectfully traverses this rejection.

As described above, Applicant respectfully asserts that the combination of Rohm and Schulein is based on improper hindsight reconstruction. Applicant further respectfully asserts that as the use of the claimed enzyme preparations and flocculants for dewatering of wastewater and sludge is novel and nonobvious, use of a known reagent or process step in the process is likewise novel and nonobvious. Accordingly, Applicant respectfully requests withdrawal of the rejections under 35 U.S.C. § 103(a) of claim 12 over Rohm in view of Huhtamaki and claims 13, 19 and 20 over Rohm and Schulein in view of Huhtamaki.

The Rejection of Claims 1-20 under 35 U.S.C. § 103(a) over U.S. Patent Nos. 6,733,673 or 6,733,674

The Examiner has maintained and made final the rejection of claims 1-20 under 35 U.S.C. § 103(a) over U.S. Patent Nos. 6,733,673 or 6,733,674 ("Sarker 673" and "Sarker 674"). In reply to Applicants arguments in the Amendment and Reply dated May 23, 2005, the Examiner states

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Applicants argue that Sarker 673 and 674 require the use of oxidants to activate the enzymes and which is not required by the instant method. It is submitted that the addition of oxidants is not excluded from the instant claims. Furthermore, it is noted that the application fails to include evidence that the instant invention and the inventions of Sarker were commonly owned at the time the instant invention was made.

Office Action at page 4.

Applicant respectfully traverses this rejection.

Applicant has amended claims 1, 4 and 14 to exclude the use of oxidants in the instantly claimed process. Applicant further respectfully asserts that at the time the instant invention was made the 673 and 674 patents were owned by Nalco Company and the instant inventors were employed by Nalco Company and further that as a condition of their employment were under a continuing obligation to assign all inventions made in the course of their employment to Nalco Company. Accordingly, Applicant respectfully requests withdrawal of the rejection of claims 1-20 under 35 U.S.C. § 103(a) over Sarker 673 and "Sarker 674.

The Rejection of Claims 1-20 under the judicially created doctrine of obviousness-type double patenting over U.S. Patent Nos. 6,733,673 or 6,733,674

Claims 1-20 are rejected under the judicially created doctrine of obviousness-type double patenting over U.S. Patent Nos. 6,733,673 or 6,733,674 ("Sarker 673" and "Sarker 674").

Applicant respectfully traverses this rejection.

As discussed above and in the prior Amendment and Reply, Applicant respectfully asserts that Sarker 673 and 674 do not teach or suggest the use of the instantly claimed enzyme preparations in the absence of chemical or enzymatic oxidants. Accordingly, Applicant respectfully requests withdrawal of the rejection of claims 1-20 under the judicially created doctrine of obviousness-type double patenting over Sarker 673 and Sarker 674.


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**CONCLUSION**

In view of the foregoing amendment and remarks, Applicant respectfully requests entry of this amendment and withdrawal of the rejections under 35 U.S.C. § 103(a) and respectfully asserts that this application is in condition for allowance. Early notice to this effect is earnestly solicited.

Respectfully Submitted,

  
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